

INORGANIC HYDROGEN COMPOUNDS AND APPLICATIONS THEREOF

ABSTRACT

Compounds are provided comprising at least one neutral, positive, or negative hydrogen species having a binding energy greater than its corresponding ordinary hydrogen species, or greater than any hydrogen species for which the corresponding ordinary hydrogen species is unstable or is not observed. Compounds comprise at least one increased binding energy hydrogen species and at least one other atom, molecule, or ion other than an increased binding energy hydrogen species. One group of such compounds contains one or more increased binding energy hydrogen species selected from the group consisting of H_n , H_n^- , and H_n^+ where n is an integer from one to three. Applications of the compounds include use in batteries, fuel cells, cutting materials, light weight high strength structural materials and synthetic fibers, cathodes for thermionic generators, photoluminescent compounds, corrosion resistant coatings, heat resistant coatings, phosphors for lighting, optical coatings, optical filters, extreme ultraviolet laser media, fiber optic cables, magnets and magnetic computer storage media, and etching agents, masking agents, dopants in semiconductor fabrication, fuels, explosives, and propellants. Increased binding energy hydrogen compounds are useful in chemical synthetic processing methods and refining methods. The increased binding energy hydrogen ion has application as the negative ion of the electrolyte of a high voltage electrolytic cell. The selectivity of increased binding energy hydrogen species in forming bonds with specific isotopes provides a means to purify desired isotopes of elements.